

## Wednesday January 8, 1997

**LT18 (8:50-12:10)**

Session 8A18

### Propagation and Antennas in Mobile Communications

Organizer: Rodney G Vaughan

Chairperson: Rodney G Vaughan, New Zealand Institute for Industrial Research Ltd.

Co-Chairperson: Ke Gong, Tsinghua University, Beijing

**8:50**

#### *The Role of the Mobile Antenna in Multipath Radio Channel Modelling*

Rodney G Vaughan

New Zealand Institute for Industrial Research Ltd.

**9:10**

#### *A Colinear Array Antenna Using Microstrip Patches Covered with Parasitic Cylinders*

\*Masahiro Karikomi, \*Xiang-Rong Lu, \*\*Tokio Taga

\*Nihon Dengyo Kosaku Co. Ltd.

\*\*NTT Wireless Systems Laboratories

**9:30**

#### *A Compact PIFA for Mobile Telephone Handsets*

C R Rowell, R D Murch,

Hong Kong University of Science and Technology

**9:50**

#### *Pattern Translation and Rotation in Uncorrelated Scenarios for Multiple Beam Antenna Design*

Rodney G Vaughan

New Zealand Institute for Industrial Research Ltd.

**10:10**

#### *A Miniaturized Capacitor-loaded Microstrip Antenna for a Portable Telephone*

Seiji Hagiwara, Koichi Tsunekawa

NTT Mobile Communications Network Inc.

**10:30 Break**

**10:50**

#### *A Modified Transmission Line Antenna for the Portable Telephone with a Finite Ground Plane*

Takehiko Tsukiji, Yasunori Kumon

Fukuoka University

**11:10**

#### *A Circularly Polarized Omnidirectional Antenna*

Koichi Sakaguchi, Nozomu Hasabe

Nihon University

**11:30**

#### *Decorrelation of Radio Channels by Compact Parasitic Antenna Structures*

Rodney G Vaughan

New Zealand Institute for Industrial Research Ltd.

**11:50**

#### *The Analysis of VHF / UHF Signal Propagation Features in Buildings*

Kening Ren, Linchang Zhang

Northern Jiaotong University

**LT18 (13:30-17:10)**

Session 8P18

### DR Antennas & Mobile Antennas

Chairperson: Jun-ichi Takada, Toyko Institute of Technology

Co-Chairperson: K W Leung, City University of Hong Kong

**13:30**

#### *Studies of Dual-Polarised Slot-Coupled Dielectric Resonator Antennas*

\*Z Fan, \*Y M M Antar, \*\*G S Jguin, \*\*N Sultan

\*Royal Military College of Canada, \*\*Canadian Space Agency

**13:50**

#### *Analysis of Aperture-Coupled Cylindrical Dielectric Resonator Antenna*

S M Shum, K M Luk

City University of Hong Kong

**14:10**

#### *Cylindrical Dielectric Resonator Antennas and Two-Element Arrays*

Z Wu, G Drossos, L E Davis

UMIST

**14:30**

#### *A Polarization Characteristics of a Small Planar Loop Antenna which can Switch the Polarization Direction*

\*M Muramoto, \*K Itoh, \*N Ishii, \*\*K Sasaki

\*Hokkaido University, \*\*Kokusai Electric Co., Ltd.

**14:50**

#### *A Broadband Printed Quadrifilar Helix Antenna with Integrated Feed*

\*A Sharaiha, \*C Terret, \*\*J P Blot

\*Universit  de Rennes I, \*\*CNET La Turbie

**15:10 Break**

**15:30**

#### *Analysis of Printed Multifilar Helical Antennas Backed by a Circular Ground Plane*

B Desplanches, A Sharaiha, C Terret

Universit  de Rennes I

**15:50**

#### *Reference Problem for Numerical Simulation of Indoor Multipath Propagation Environment*

Yuji Matsumoto, Jun-ichi Takada

Tokyo Institute of Technology

**16:10**

#### *Analysis of Probe-Fed DR Antenna*

Z N Chen, K W Leung, K M Luk, E K N Yung

City University of Hong Kong

**16:30**

#### *A Numerical Simulation of the Indoor Multipath Environment Using the Ray-Tracing Technique*

Hideo Mochida, Jun-ichi Takada

Tokyo Institute of Technology

**16:50**

#### *Impedance of Slot Antenna Which is Backed by a Spherical Cavity*

K Y Chow, K W Leung

City University of Hong Kong

**Wednesday January 8, 1997**

**LT17 (8:50-11:30)**

Session 8A17

**Antenna Theory & Measurement 1**

Chairperson: H Nakano, Hosei University

Co-Chairperson: L Shafai, University of Manitoba

**8:50**

***An Integral Equation for Microstrip Antennas***

H Nakano,  
Hosei University

**9:10**

***Shape and Proximity Effects on Resistive Losses in Multi-Conductor Transmission Lines and Antennas***

Pabitra N Sen, Thomas DeSwiet  
Schlumberger-Doll Research

**9:30**

***On the Use of PPM to Deal with Arrays with Elements not Equally Spaced***

\*António Manuel E S Casimiro, \*\* Xianfeng Ren,  
\*\* Joaquim A R Azevedo, \*\*Alberto J V Grilo  
\*Universidade do Algarve  
\*\*Universidade da Madeira

**9:50**

***Uniform Diffraction Coefficients in the physical Optics Analysis of a Canonical Problem***

Makoto Ando, Andrey Andrenko  
Tokyo Institute of Technology

**10:10**

***Experimental Study of the Resonant Quadri-filar Helix***

J S Guo, H Zheng  
Chinese Academy of Sciences

**10:30 Break**

**10:50**

***Petal-Type Deployable Space Antennas for Radio Astronomy***

V I Bujakas, A S Gvamichava, A G Rybakova  
Astro Space Center of P. N. Lebedev Physical Institute

**11:10**

***Topload and Guy Insulator Voltage Limitations for Low Frequency Antenna Systems***

Peder Hansen, Jose Chavez  
Naval Command and Communications Systems Center

**LT17 (13:30-15:10)**

Session 8P17

**Antenna Theory & Measurement 2**

Chairperson: Jash Dahele, Royal Military College of Science

Co-Chairperson: W Y Tam, Hong Kong Polytechnic Univ.

**13:30**

***On Analysis and Synthesis of the Fractal Antenna Array***

\*Liang Xu, \*Zhensen Wu, \*\*Wenbing Wang  
\*Xidian University  
\*\*Xi'an Jiao Tong University

**13:50**

***Design and Validation of Uniform Helical Antennas, with Varying Diameters, Using NEC***

\*Nizar Sultan, \*Tony Pellerin, \*\*C W Trueman, \*\*S J Kubina  
\*Canadian Space Agency  
\*\*Concordia University

**14:10**

***The Beam Analysis of Electrical Scan-tracking Antenna for 8-mm Band***

De-miao Yao, Zhi-zhong Zhao  
National University of Defense Technology

**14:30**

***A Ultra-wide-band Radar System Using a New Type of Ultra-wide-band Conical Antenna Ridged With a Novel Slot Antenna***

Naichang Yuan, Jianguo He, Junjie Mao, Kecheng Liu  
National University of Defense Technology of China

**14:50**

***Design of Contoured Beams for Satellite Antennas through Minimax Optimization***

Chongjin Xie, Huazhi Wang  
Beijing University of Posts and Telecommunications

**15:10 Break**

**Wednesday January 8, 1997**

**Session 8A16**

**LT16 (8:50-11:10)**

**Computational Techniques 3**

Chairperson: Chun-Hsiung Chen, National Taiwan Univ.

Co-Chairperson: Joshua S L Wong, Hong Kong Polytechnic University

**8:50**

*Green's Function Method in the Analysis of Wave Scattering by Finite Wire Gratings in Grounded Slab Guide : Rigorous Approach and Physical Optics Technique*

Andrey Andrenko, Makoto Ando  
Tokyo Institute of Technology

**9:10**

*Moment Method of a Single Current Type for Air-Dielectric Interfaces in a Structure*

Y L Chow, D Faggetter  
University of Waterloo

**9:30**

*Effects of Buildings on Electrical Field Distribution of a Medium Wave Transmitting Antenna*

\*Yongling Zhang, \*\*Fanli Kong  
\*Shanghai University  
\*\*Shanghai Broadcasting, Film and Television Bureau

**9:50**

*A FFT-Wavelet-Based Multigrid Method for Electromagnetic Scattering Problems*

\*C H Chan, \*\*C M Lin, \*\*\*Y M Song, \*\*\*D G Fang  
\*City University of Hong Kong, \*\*University of Washington, \*\*\*Nanjing University of Science and Technology

**10:10**

*Efficient Space-Domain Calculation of Moment Matrix Elements in Planar Microwave Circuits*

Markus O Thieme, Ralph H Raßhofer, Erwin M Biebl  
Technische Universität München

**10:30 Break**

**10:50**

*Microwaves Filtering Using Parallel Computing Techniques: An Analysis of Performance*

\*H Tertuliano, \*\*M Fiallos, \*\*A Marques  
\*Federal University of Parana-Brazil  
\*\*Federal University of Ceara

**Session 8P16**

**LT16 (13:30-16:30)**

**Wavelets in Electromagnetics & Neural Network Techniques in Electromagnetics**

Organizer: K S Chen

Chairperson: Chin-fan Chen, National Cheng Kung Univ.

Co-Chairperson: K S Chen, National Central University

**13:30**

*Analysis, Identification and Optimization of Dynamic Systems via Haar Wavelets*

Chin-fan Chen  
National Cheng-kung University

**13:50**

*Spectral Domain Full Wave Analysis of Microstrip Antennas by Wavelet Expansion Method*

J Xia  
Beijing Institute of Technology

**14:10**

*Analysis of Rectangular Patch Using Wavelet Basis*

Y W Poon, W Y Tam  
The Hong Kong Polytechnic University

**14:30**

*Estimation of Soil Moisture from SAR Data by a Neural Network Technique*

\*K S Chen, \*\*Y C Tzeng  
\*National Central University  
\*\*National Lien-Ho College of Engineering and Commerce

**14:50**

*Prediction of Frequency Characteristics of Indoor Radio Propagation by Neural Network*

Qin Zhou, A K Y Lai  
The Chinese University of Hong Kong

**15:10 Break**

**15:30**

*Cubic Spline Wavelets in  $H_0^2(I)$  and the Multiresolution*

\*Xiaobing Gan, \*\*Xiangchu Feng, \*Chen Xu  
\*Shenzhen University  
\*\*Xidian University

**15:50**

*GaAs MESFET Characterization Using Neural Network*

Wen Wu, Hong Gu, Q R Yang  
Southeast University

**16:10**

*Electromagnetic Scattering from One-Dimensional Fractal Surface Using Wavelet Transforms*

Lixin Guo, Zhensen Wu  
Xidian University

**Wednesday January 8, 1997**

**LT15 (8:50-11:30)**

Session 8A15

### Scattering & Diffraction 4

Chairperson: Masahiro Hashimoto, Osaka Electro-Communication Univ.

Co-Chairperson: Qun Wu, Harbin Institute of Technology

**8:50**

*Scattering from a Single Stage of Jet Engine Blades*

\*K K Chan, \*\*F Tremblay

\*Chan Technologies Inc

\*\*DREO

**9:10**

*Eliminating Spurious Solutions in Single Integral Equations for Wave Scattering by Systems of Dielectric Cylinders*

D R Swatek, I R Ciric

The University of Manitoba

**9:30**

*High-Frequency Diffraction and Low-Frequency Scattering by a Sharp Wedge*

Masahiro Hashimoto

Osaka Electro-Communication University

**9:50**

*RCS Prediction of a Five-Edge Flat Plate Coated with Lossy Material*

Shangpin Lin, Wenyan Guo, Ming Li

Harbin Institute of Technology

**10:10**

*High Frequency Scattering by an Impedance Wedge*

Wenyan Guo, Shangpin Lin, Qun Wu

Harbin Institute of Technology

**10:30 Break**

**10:50**

*Second Order Non-Gaussian Correlations of Elliptically Polarised Light Scattered from Ellipsoidal Particles*

A P Bates, K I Hopcraft, E Jakeman

The University of Nottingham

**11:10**

*Electromagnetic Scattering by a Perfectly Conducting Patch Array on a Chiral Slab*

Xinyu Hou, Wei Wan, Goubin Wan

Northwestern Polytechnical University

**LT15 (13:30-16:10)**

Session 8P15

### Time-Domain Electromagnetics

Chairperson: K M Chen, Michigan State University

Co-Chairperson: Omar Wing, The Chinese University of Hong Kong

**13:30**

*Target Identification and Detection Using Ultra-Wideband / Short-Pulse Radars*

K M Chen, E J Rothwell, D P Nyquist, A Norman, G Wallinga, Y Dai

Michigan State University

**13:50**

*Time-Domain Solution of TM and TE Waves with the Characteristics and a New ABC*

\*Jun-Fa Mao, \*\*Omar Wing

\*Shanghai Jiao Tong University

\*\*The Chinese University of Hong Kong

**14:10**

*Simulation of the Temporal Development of the SPRITE Event using Nonlinear Equations in a 3D Environment*

Michael E Baginski, Zhi Ding, George W Jarriel

Auburn University

**14:30**

*Using a Generalized Likelihood Ratio Test to Perform Radar Target Identification*

Jon E Mooney, Zhi Ding, Lloyd S Riggs

Auburn University

**14:50**

*Numerical Studies of Time-Domain Impulse Responses of a Spherically Layered Medium*

Meng-Huei Shenq, Yan-Ming Huang, Hung-Wen Chang,

National Sun Yat-sen University

**15:10 Break**

**15:30**

*On Electromagnetic Pulses Produced by the Line Radiator*

V V Borisov

St. Petersburg University

**15:50**

*The Localized Electromagnetic Waves Produced by the Moving Pulse of Line Current*

V V Borisov

St. Petersburg University

**Wednesday January 8, 1997**

**LT14 (8:50-11:50)**

Session 8A14

**Millimeter, Submillimeter & Lightwaves 3**

Organizer: Weigan Lin

Chairperson: Weigan Lin, University of Electronic Science & Technology of China

Co-Chairperson: Yiyuan Chen, Southeast University

**8:50**

***Study on Optically Pumped Submillimeter Wave Laser of  $NH_3$  Molecules in Vibrational Ground State***

Jiayin Qin, Xingshi Zheng, Xizhang Luo, Yikun Lin  
Zhongshan University

**9:10**

***Photonic ATM Switching Technologies***

Kun Qiu, Dong Zhou, Hong Zhang, Tao Zhang  
University of Electronic Science & Technology of China

**9:30**

***Analyzing Fin-line by the Conservation of Complex Power Technique***

Liangjin Xue, Yonghong Zhang, Jun Xu  
University of Electronic Science and Technology of China

**9:50**

***Investigation of Wideband Varactor-Tuned Harmonic Oscillators at W-Band***

Yong Fan, Zhengde Wu, Xiaohong Tang  
University of Electronic Science and Technology of China

**10:10**

***False Data Eliminating in a Charging Surface 3-D Imaging 94GHz LFM CW Radar***

Jianyu Yang, Xiaobo Yang, Zhuming Chen, Yiyuan Ding  
University of Electronic Science & Technology of China

**10:30 Break**

**10:50**

***46GHz Injection-Locked Gunn Diode Oscillator***

Xiaowei Zhu, Yiyuan Chen, Wei Hong  
Southeast University

**11:10**

***Static Field Fitting the Cassinian Oval or the Inverse Cassinian Oval Boundary***

Weigan Lin, Jianhua Zhu  
University of Electronic Science & Technology of China

**11:30**

***3-mm Band Phase-Locked Microwave Source***

\*S Q Xue, \*H H Li, \*W Z Wang, \*\*Z D Wu  
\*National Institute of Metrology  
\*\*Univ. of Electronic Science & Technology of China

**LT14 (13:30-15:50)**

Session 8P14

**Millimeter, Submillimeter & Lightwaves 4**

Organizer: Weigan Lin

Chairperson: Weigan Lin, University of Electronic Science & Technology of China

Co-Chairperson: H F Zhang, The 16th Research Inst. of the Ministry of Electronic Industry

**13:30**

***Cycloids as Boundaries of Static Fields***

Jianhua Zhu, Weigan Lin  
University of Electronic Science & Technology of China

**13:50**

***1.3W 8mm Band Gunn Diode Power-Combiner***

Hua Fang Zhang, Xue Bin Song  
The 16th Research Institute of the Ministry of Electronic Industry

**14:10**

***The Involute of Circle and Evolute of Ellipse as Generators of Static Field***

Jianhua Zhu, Weigan Lin  
University of Electronic Science & Technology of China

**14:30**

***A New Design Technique for Millimeter Wave Horn Antenna***

Xing Hui Yin, Zhi Cai Xu  
Academia Sinica

**14:50**

***A Remote Sensing Antenna with Extra-Low Sidelobes for Millimeter-Wave Atmospheric Measurement***

Xing Hui Yin, Zhi Cai Xu  
Academia Sinica

**15:10 Break**

**15:30**

***A Slow-Wave Free-Electron-Laser in a Cylindrical Waveguide Loaded With Double-layer Dielectric***

Chuan Lu Li, Bao Liang Qian, Yong Gui Liu  
National University of Defense Technology

## Wednesday January 8, 1997

### LT13 (8:50-12:10)

#### Session 8A13

#### RF & Microwave Circuits 4

Organizers : Wolfgang J R Hoefer, Poman So  
 Chairperson: Wolfgang J R Hoefer, University of Victoria  
 Co-Chairperson: Poman So, University of Victoria

**8:50**

#### *Nonlinear Analysis of Microwave Circuits by Means of Spectral Balance Method*

Adalbert Beyer, Jacek Rutkowski  
 Gerhard-Mercator-Universität-GH-Duisburg

**9:10**

#### *Modeling of CPW Tee-Junctions "How Accurate Is Accurate Enough?"*

K S Kong, Y C Shih  
 Hughes Spaces & Communications Company

**9:30**

#### *Modeling of Thin Conducting Sheets in TLM*

Bertram Isele, Peter Russer  
 Technische Universität München

**9:50**

#### *Modeling and Characterization of Planar Circuits using the TLM Method and Systems Identifications*

\*B Isele, \*Peter Russer, \*\*K W Royer, \*\*M W R Ng,  
 \*\*M I Sobhy  
 \*Technische Universität München  
 \*\*University of Kent

**10:10**

#### *An Efficient Method for the Simulation of Nonlinear Circuits*

\*Bernd Roth, \*\*Adalbert Beyer  
 \*IMST  
 \*\*Gerhard-Mercator-Universität-GH-Duisburg

**10:30 Break**

**10:50**

#### *Drastic Changes in Performance of Planar-Circuit Transmission Lines and Devices When Metal Strips Have Both Finite Conductivity and Thickness*

Mikio Tsuji, Hiroshi Shigesawa  
 Doshisha University

**11:10**

#### *SAW Programmable and Fixed-Code Matched Filters for CDMA Mobile Radio Applications*

\*R Weigel, \*\*L Reindl, \*\*\*F Seifert  
 \*Technische Universität München  
 \*\*Siemens AG München  
 \*\*\*Technische Universität Wien

**11:30**

#### *Alternated Multilayered CPW/Slotline/Microstrip Hybrid Technique for Compact RF and Microwave Circuits*

Ke Wu, David Maurin  
 Ecole Polytechnique

**11:50**

#### *Fast and Accurate Analysis of Arbitrary High Q Patch Resonator - A Combined 2- and 3-D Approach*

\*A Torabian, \*\*Y L Chow  
 \*University of Waterloo, \*\*City University of Hong Kong

### LT13 (13:30-17:10)

#### Session 8P13

#### RF & Microwave Circuits 5

Chairperson: A L Cullen, University College London  
 Co-Chairperson: Shenggang Liu, Univ. of Electronic Science and Tech. of China

**13:30**

#### *Theory of Electron Beam-Wave Interaction in Magnetized Plasma Waveguide (Invited Paper)*

\*Shenggang Liu, \*\*K Schiinemann, \*Liquan Song, \*Dajun Zhu,  
 \*Y Yan  
 \*University of Electronic Science and Technology of China  
 \*\*Technical University of Hamburg-Harburg

**13:50**

#### *A New Form of Movable Waveguide Short-Circuit (Invited Paper)*

A L Cullen  
 University College London

**14:10**

#### *A New Topology for CPW Bandpass Filters*

Sivanand Krishnan, S Uysal, K W Eccleston  
 National University of Singapore

**14:30**

#### *A Passive T/R Switch Using Wide-Gap Semiconductors for Single Antenna Ground Probing Radar*

S P Kingsley, J P R David, R Grey, G Hill  
 University of Sheffield

**14:50**

#### *An Innovative Sub-System for SSB Broadcasting Services*

Chi-Lun Tong, Yu-On Yam  
 City University of Hong Kong

**15:10 Break**

**15:30**

#### *Theoretical Analysis and Experimental Research on Characteristics of a Coupled Meander Line on Magnetic Microstrip Substrate*

Sheung-chuan Zhu  
 Peking University

**15:50**

#### *Design of Broadside-Coupled Strip Transmission Line Directional Couplers*

J S Guo, H Zheng  
 Chinese Academy of Sciences

**16:10**

#### *Thermometric Sensor Based on Lossy Coplanar Waveguides*

D Allal, B Bocquet, Y Leroy  
 Institut d'Electronique et de Microelectronique du Nord

**16:30**

#### *Analysis of N-tier GaAs MESFET Matrix Amplifiers by the Method of Transmission-Line-Modelling (Matrix)*

Yuk Chan, Edward K N Yung  
 City University of Hong Kong

**16:50**

#### *Modeling of Plasmas Sustained by Ionizing Electromagnetic Surface Waves*

\*Yu M Aliev, \*\*H Schlüter, \*\*\*A Shivarova  
 \*Russian Academy of Science, \*\*Ruhr Uni., \*\*\*Sofia Uni.



## Wednesday January 8, 1997

LT12 (8:50-12:10)

### Session 8A12

#### Scattering by Rough Surface and Random Media 1

Organizers: Hisanao Ogura, Mitsuo Tateiba

Chairperson: Hisanao Ogura, Kyoto University

Co-Chairperson: Mitsuo Tateiba, Kyushu University

**8:50**

##### *Scattering of Light from a Low-Contrast, Randomly Rough Interface Between Two Dielectric Media*

\*T A Leskova, \*\*A A Maradudin

\*Russian Academy of Sciences, \*\*University of California

**9:10**

##### *A Probabilistic Theory of Scattering from a Random Periodic Surface*

Junichi Nakayama, Gao Lan, Yasuhiko Tamura

Kyoto Institute of Technology

**9:30**

##### *Scattering of Waves from Very Rough Random Surface- Stochastic Functional Approach*

H Ogura, Z L Wang

Kyoto University

**9:50**

##### *A Double Kirchhoff Approximation by Means of Stochastic Functional Approach*

Z L Wang, H Ogura

Kyoto University

**10:10**

##### *Second-Order Incoherent Scattering from Slightly Rough Random Surfaces: Comparison with the Stochastic Functional Approach*

Shigeo Ito

Toyo University

**10:30 Break**

**10:50**

##### *Polarization Characteristics of the Electromagnetic Waves Scattered from a Slightly Random Surface- +45 deg. Polarized Incidence*

T Kawanishi, H Ogura

Kyoto University

**11:10**

##### *Numerical Studies of Electromagnetic Wave Scattering from Two-Dimensional Random Rough Surfaces*

Kyung Pak, Leung Tsang, Guifu Zhang

University of Washington

**11:30**

##### *Propagation and Localization of Waves in a Waveguide with Random Boundaries*

\*V Freilikher, \*\*I Yurkevich, \*\*\*H Ogura, \*\*\*\*Z L Wang

\*Bar-Ilan University, \*\*International Center for Theoretical Physics

\*\*\*Kyoto University, \*\*\*\*Univ. of Elect. Sci. and Tech. of China

**11:50**

##### *Application of the Angular Correlation Function of Scattered Wave by a Random Rough Surface With and Without a Single Scattering Object*

Leung Tsang, Kyung Pak, Guifu Zhang

University of Washington

LT12 (13:30-17:30)

### Session 8P12

#### Scattering by Rough Surface and Random Media 2

Organizers: Mitsuo Tateiba, Hisanao Ogura

Chairperson: Mitsuo Tateiba, Kyushu University

Co-Chairperson: Hisanao Ogura, Kyoto University

**13:30**

##### *Observation of Backscattering Enhancement in Random Media Using Partially Coherent Light Sources*

\*Yasuyuki Okamura, \*\*Kazuhiro Yamada, \*\*Sadahiko Yamamoto

\*Wakayama University, \*\*Osaka University

**13:50**

##### *Seeing Through Scattering Random Media*

Koichi Shimizu, Tomoaki Hirayama, Yuji Kato

Hokkaido University

**14:10**

##### *Modified T-Matrix Formulation of Multiple Scattering of Waves by Random Discrete Scatterers*

Wei Ren, Mitsuo Tateiba

Kyushu University

**14:30**

##### *Radar Cross-Sections of Conducting Elliptic Cylinders Embedded in Strong Turbulent Media*

Mitsuo Tateiba, Zhi-Qi Meng, Tatsuyuki Hanada

Kyushu University

**14:50**

##### *The Resolution Limit of SAR due to Propagation Effects*

Zhen-song Wang, Academia Sinica

**15:10 Break**

**15:30**

##### *Disordered Fabry-Perot Interferometer: The Influence of Nonlinear Medium Between the Plates*

Richard Berkovits

Bar-Ilan University

**15:50**

##### *Effective Medium Parameters of a Thin Coating Layer of Random Discrete Chiral Scatterers*

Wei Ren, Mitsuo Tateiba

Kyushu University

**16:10**

##### *Polarization Effects on the Effective Dielectric Constant of a Discrete Random Medium Containing Dielectric Cylinders*

\*Yukihisa Nanbu, \*\*Mitsuo Tateiba

\*Sasebo National College of Tech., \*\*Kyushu University

**16:30**

##### *Coherent Electromagnetic Wave Scattering from a Thin Layer of Small Particles*

Wei Ren, Tsuyoshi Matsuoaka, Mitsuo Tateiba

Kyushu University

**16:50**

##### *A New Approach to the Coherent Wave Scattering from a Thin Layer of Particles*

Mitsuo Tateiba, Wei Ren

Kyushu University

**17:10**

##### *Correlation Between Radiobrightness and Temperature for the Medium with Random Boundary Conditions*

K P Gaikovitch

Radiophysical Research Institute

## Wednesday January 8, 1997

### LT11 (8:50-11:30)

Session 8A11

#### Romote Sensing 1

Organizer: James Wait, University of Arizona

Chairperson: A Gustavsson, National Defence Research  
Establishment

Co-Chairperson: Samir F Mahmoud, Kuwait University

**8:50**

#### *Early Results from the First Experiments with the VHF SAR CARABAS II*

L-E Andersson, B Flood, P-O Fr  lind, A Gustavsson, H Hellsten,  
M Herberthson, T Jonsson, B Larsson, S Nilsson, O Seger,  
G Stenstr  m, L M H Ulander  
National Defence Research Establishment (FOA)

**9:10**

#### *Vector Electromagnetic Diffraction Tomography for Broadband Multi-monostatic Ground Penetrating Radar*

R W Deming, A J Devaney  
Northeastern University

**9:30**

#### *Geological Applications of Scene Coherence from SAR Images Pair*

\*M A D'Iorio, \*P W Vachon, \*\*P Budkewitsch, \*D Geudtner  
\*Canada Centre for Remote Sensing, \*\*MIR T  l  tection

**9:50**

#### *Electromagnetic Wave Interaction with a Layered Earth Having a Tilted Anisotropy*

Samir F Mahmoud  
Kuwait University

**10:10**

#### *Scattering From Ionised Columns Above the Cloud Tops-Theory*

\*Craig J Rodger, \*\*James R Wait, \*R L Dowden  
\*Otago University  
\*\*University of Arizona

**10:30 Break**

**10:50**

#### *Magnetotelluric Survey Across the Northern Margin of the Eastern Ghats, Eastern India*

K K Roy, A K Singh, S M Srivastava  
Indian Institute of Technology

**11:10**

#### *The Investigation of Frequency-Wavenumber Spectra of Gravity-Capillary Surface Waves with Optical and Radio Methods*

V I Titov, E M Zuikova, M B Kanevsky, V Y Karaev, N A Sedunov  
Russian Academy of Science

### LT11 (13:30-16:10)

Session 8P11

#### Remote Sensing 2

Chairperson: Andrew J Blanchard, University of Missouri-  
Columbia

Co-Chairperson: Kenneth M Golden, University of Utah

**13:30**

#### *The Application of GPR Modeling to Geological Engineering*

\*Huilian Wang, \*\*Peng Zhang  
\*China University of Geosciences, \*\*Radiodetection Limited  
Beijing Representative Office

**13:50**

#### *The Effect of Unfocused Scatterers on Image Quality in High Resolution SAR Data*

Andrew J Blanchard  
University of Missouri-Columbia

**14:10**

#### *Complex Permittivity and Backscatter Signature of Sea Ice*

Kenneth M Golden  
University of Utah

**14:30**

#### *Multispectral Satellite Analysis of the Coastal Marine Atmospheric Boundary Layer*

Carlyle H Wash, Kenneth L Davidson, Mary S Jordan  
Naval Postgraduate School Code

**14:50**

#### *Estimation of Snow Water Equivalency Using SIR-C/X-SAR*

Jiancheng Shi, J Dozier  
University of California

**15:10 Break**

**15:30**

#### *Backscatter Modeling for the Rice Growth Monitoring*

Jun-Fei Li, Yun Shao, Hua-Dong Guo  
Chinese Academy of Sciences

**15:50**

#### *Measurement of the Ocean Surface Tilts by Microwave Radar*

V Yu Karaev, M B Kanevsky  
Russian Academy of Sciences



## Wednesday January 8, 1997

Session 8A10	LT10 (8:50-12:30)	Session 8P10	LT10 (13:30-17:10)
	<b>International Workshop</b> <b>"Related Correlation Effects in Optics and Condensed Matter Physics 3"</b> <i>(Sponsored by U.S. Army Research Office)</i> Organizer(s): Mikael Ciftan, Zu-Han Gu Chairperson: Zu-Han Gu Co-Chairperson: Mikael Ciftan, A Maradudin, E Wolf Presider: Mikael Ciftan, U.S Army Research Office		<b>International Workshop</b> <b>"Related Correlation Effects in Optics and Condensed Matter Physics 4"</b> <i>(Sponsored by U.S. Army Research Office)</i> Organizer(s): Mikael Ciftan, Zu-Han Gu Chairperson: Zu-Han Gu Co-Chairperson: Mikael Ciftan, A Maradudin, E Wolf Presider: A Maradudin, University of California, Irvine
	<hr/> <b>8:50 - 9:40</b>  <i>Statistics of Radiation Propagating in a Disordered Medium: Diagrams, Random Matrices and All That</i> Moshe Kaveh, Eugene Kogan Bar-Ilan University		<hr/> <b>13:30 - 14:20</b>  <i>Transmission of Microwave Radiation Through 3D Metal Wire Network with Random Scatters</i> M Stoytchev, A Z Genack Queens College of CUNY
	<b>9:40 - 10:30</b>  <i>Fluctuations of Microwave Intensity, Transmission and Conductance in Quasi One-dimensional Random Samples with Small Values of the Dimensionless Conductance</i> M Stoytchev, A Z Genack New York State Center for Advanced Technology		<b>14:20 - 15:10</b>  <i>Scattering of a Plane Wave by a Dielectric Cylinder in Front of a Generally reflecting surface"</i> R Borghi, F Gori, M Santarsiero, F Frezza, G Schettini Universit� "La Sapienza"
	<b>10:30 - 10:50</b>  <b>Break</b>		<b>15:10 - 15:30</b>  <b>Break</b>
	<b>10:50 - 11:40</b>  <i>Spectral Changes of Light and Scattering Phenomena</i> *T Asakura, **T Shirai *Hokkaido University **MITI		<b>15:30- 17:10</b>  <b>Discussion</b>
	<b>11:40 - 12:30</b>  <i>Intensity Fluctuations and Correlations in Coherent Wave Transport</i> Z Q Zhang Hong Kong University of Science and Technology		

## Wednesday January 8, 1997

**LT9 (8:50-11:30)**

Session 8A9

### Computational Methods in Lightwave Technology

Organizer: Philip Cheung

Chairperson: Philip Cheung, University of Minnesota

Co-Chairperson: Martin J Lahart, Army Research Laboratory

**8:50**

#### *Finding Stationary Values of Constrained Rayleigh Quotients Arising from Waveguide Analysis*

Chang Peng, Daniel Boley, Philip Cheung  
University of Minnesota

**9:10**

#### *Propagation Modes in a Cylindrical Waveguide with Three Dielectric Regions*

Martin J Lahart  
Army Research Laboratory

**9:30**

#### *Combined Effect of Cross-Phase Modulation and Higher-Order Dispersion on Soliton Switching in Nonlinear Fiber Couplers*

P M Ramos, C R Paiva  
Instituto de Telecomunicacoes, IST

**9:50**

#### *Rigorous Numerical Analysis of Non-Uniform Optical Guided-Wave Devices*

BMA Rahman, T Wongcharoen, M Rajarajan, N Mahmood,  
P A Buah, K T V Grattan  
City University of London

**10:10**

#### *Power Transfer Characteristics in a Grating-Assisted Three-Waveguide Directional Coupler*

Koki Watanabe, Kiyotoshi Yasumoto  
Kyushu University

**10:30 Break**

**10:50**

#### *Modal Characteristics and Three-Dimensional Modeling of Fused Tapered Six-Port Optical Fiber Couplers*

\*Guo-Ju Liao, \*\*Hung-chun Chang, \*\*Cheng Wen Wu,  
\*National Taiwan University  
\*\*Chung Cheng Institute of Technology

**11:10**

#### *Approximate Solution of the Whispering Gallery Modes and Estimation of the Spontaneous Emission Coupling Factor for Microdisk Lasers*

Mee K Chin  
Nanyang Technological University

**LT9 (13:30-15:50)**

Session 8P9

### Integrated Optics & Fiber Optics

Organizer: A R Mickelson

Chairperson: A R Mickelson, Univ. of Colorado at Boulder

Co-Chairperson: M H Lee, Electronics & Telecommunication Research Institute

**13:30**

#### *A Polymeric Photonics 2X2 Switch with Low Crosstalk and Low Operating Voltage*

Seon Gyu Han, Hyuek Jae Lee, Myung-Hyun Lee, Hyung Jong Lee,  
Hye-Young Kim, Yong Hyub Won  
Electronics and Telecommunication Research Institute

**13:50**

#### *Degree of Polarization and Electro-Optic Effects of Poled Polymeric Films for Photonic Applications*

Myung-Hyun Lee, Hyung-Jong Lee, Seon Gyu Han, Kwang-Uk Chu, Hye-Young Kim, Yong Hyub Won  
Electronics and Telecommunication Research Institute

**14:10**

#### *Numerical Analysis on the Dispersion and Nonlinear Effect Limited Maximum Transmission Bit Rates of Transfrom-Limited Pulses in Single-Mode Fibers*

Kyong Hon Kim, Hak Kyu Lee, Min-Yong Jeon, Joon Tae Ahn, Ho Young Kim, Dong Sung Lim, El-Hang Lee  
Electronics and Telecommunications Research Institute

**14:30**

#### *Mode-Field Radius Defined by Normalized Centre Power Density and Its Application in the Prediction of Propagation Characteristics of Single-Mode Fibres*

X P Dong, B C B Chu, K S Chiang  
City University of Hong Kong

**14:50**

#### *Optical Cell Header Replacement Using A Nonlinear Optical Loop Mirror (NOLM)*

Hyuek Jae Lee, Ki Hong Kim, Jee Yon Choi, Yong Hyub Won  
Electronics and Telecommunications Research Institute

**15:10 Break**

**15:30**

#### *Fiber-Optic Pressure Sensor with Remote-Sensing Capability*

Y H Yeh, W S Jung, D S Lah  
Kyung Hee University

## Wednesday January 8, 1997

LT8 (8:50-13:10)

### Session 8A8

#### Photonics, Nonlinear Optics and Devices 2

Organizer: Ting-Chung Poon

Chairperson: T-C Poon, Virginia Poly. Inst. and State Univ.

Co-Chairperson: C-W Tarn, National Taiwan Inst. of Tech.

**8:50**

*Optical Techniques for Wavelet Transform Analysis\**

\*\*C DeCusatis, \*P Das

\*IBM Corporation, \*\*Rensselaer Polytechnic Institute

**9:30**

*Ray Trajectories in Quadratic-Index Planar and Cylindrical Tapers*

\*V Suppanitchakij, \*\*A Safaai-Jazi

\*King Mongkut's Institute of Technology Thonburi

\*\*Virginia Polytechnic Institute and State University

**9:50**

*The Polarization Changing and Beam Profile Deformation of Light During the Acoustooptic Interaction with Longitudinal and Shear Ultrasonic Waves in Isotropic Media*

Chen Wen Tarn

National Taiwan Institute of Technology

**10:10**

*Nonlinear Photorefractive Fibers: Fabrication and Devices*

Francis T S Yu, Shizhuo Yin

The Pennsylvania State University

**10:30 Break**

**10:50**

*Parallax Images Capture, Interpolation and Animation System for Stereographic Display*

Yen C King, Cheng H Chuang, Hsuan T Chang, C J Kuo

National Chung Cheng University

**11:10**

*Modelling, Simulation, Design Optimization and Fabrication of Guided-Wave Photonic Devices*

G L Yip, McGill University

**11:30**

*Optical Display of One-Dimensional Transient Wave Propagation in Dispersive Media*

Ioannis M Besieris, Ting Chung Poon

Virginia Polytechnic Institute and State University

**11:50**

*Parallel Implementation of Digital Reconstruction of Optical Holograms Using Message Passing Interface (MPI)*

\*S C Chu, \*J Gerlach, \*\*T C Poon, \*C Tu

\*Radford Univ., \*\*Virginia Polytechnic Institute and State Univ.,

**12:10**

*Models for Analysis and Design of Diffractive Optical Elements*

\*Joseph N Mait, \*Dennis W Prather, \*\*Mark S Mirotznik

\*U.S. Army Research Lab.

\*\*The Catholic Univ. of America

**12:30**

*Rigorous Full-field Transient Analysis of Multi-wave Mixing in Photorefractive Materials*

Partha P Banerjee, John M Jarem

University of Alabama in Huntsville

**12:50**

*Spatially Multiplexed Holograms: A Pixelated Approach*

Monish R Chatterjee, Shih-Tun Chen

Binghamton University

+ double time-slot (40 minutes)

LT8 (13:30-17:30)

### Session 8P8

#### Photonics, Nonlinear Optics & Devices 3

Organizer: Kin S Chiang

Chairperson: Kin S Chiang, City University of Hong Kong

Co-Chairperson: Rowland A Sammut, The Uni. of NSW

**13:30**

*Galerkin's Method Applied to Mapped Infinite Domains: Vector Solutions for Optical Waveguide Modes*

Kai Ming Lo, Alex Tak Ho Li

The University of Hong Kong

**13:50**

*Polarization-Insensitive Optical Waveguides*

K S Chiang, W P Wong

City University of Hong Kong

**14:10**

*Optical Switching with Multi-Frequency Spatial Solitons*

R A Sammut, H T Tran, W Samir, N A Ansari

University College, The University of New South Wales

**14:30**

*Ultrafast Nonlinearity of Metals Across Phase Transition from Solid to Liquid*

N I Zheludev

University of Southampton

**14:50**

*Non-Degenerate Four-Wave Mixing in a Birefringent Optical Fibre Pumped with a Dye-Laser*

K P Lor, K S Chiang, Y T Chow

City University of Hong Kong

**15:10 Break**

**15:30**

*Evolution of Idea and Technology in Special Fibre-Optics*

Hung-Chia Huang

Shanghai University

**15:50**

*Transmission of Polarized Light in Twisted Optical Fibres*

X P Dong, B C B Chu, K S Chiang

City University of Hong Kong

**16:10**

*Fabrication and Applications of Dispersion Varying Optical Fibre*

D J Richardson

Southampton University

**16:30**

*WDM Filter Employing Mode Conversion Lens*

M Shirasaki

Fujitsu Laboratories Ltd.

**16:50**

*Optical Band-Pass Filter with Two Concatenate Fibre Bragg Gratings*

K O Lee, K S Chiang

City University of Hong Kong

**15:10**

*Modelling of Optical Waveguides Using Airy Functions*

A K Chatak, I C Goyal

Indian Institute of Technology

## Wednesday January 8, 1997

**LT7 (8:50-12:10)**

Session 8A7

### Medical Applications & Biological Effects 2

Organizer: Henry Lai

Chairperson: Henry Lai, University of Washington

Co-Chairperson: C K Chou, City of Hope National Medical Centre

**8:50**

#### *Melatonin Blocks Microwave-Induced DNA Strand Breaks in Rat Brain Cells*

Henry Lai, Narendra P Singh  
University of Washington

**9:10**

#### *Some Developments in the Microwave Forceps Concept*

\*A L Cullen, \*H D Griffiths, \*\*\*D Durand, \*\*\*M I Neto  
\*University College London  
\*\*INT  
\*\*\* IST

**9:30**

#### *EM 3D Modelling of Fields in the Human Head*

\*I J Dilworth, \*\*Y Huang  
\*University of Essex  
\*\*University of Liverpool

**9:50**

#### *Wide-Aperture Microwave Catheter-Based Cardiac Ablation*

\*Carey M Rappaport, \*Zeji Gu, \*\*Paul J Wang  
\*Northeastern University  
\*\*New England Medical Center Hospitals

**10:10**

#### *Magnetic Resonance Imaging Induced RF Heating Near Implanted Spinal Fusion Stimulator*

C K Chou, J A McDougall, K W Chan  
City of Hope National Medical Center

**10:30 Break**

**10:50**

#### *Microwave Life-Detection System for Detecting Human Subjects Through Barriers*

K M Chen, Y Huang, A Norman, J Zhang  
Michigan State University

**11:10**

#### *Heat Transfer in a Human Model Under Microwave Radiation*

\*Riadh W Y Habash, \*Nabil M Abdul Kadir,  
\*\*Ahmad Hairi Abu Bakar  
\*School of Engineering  
\*\*MARA Institute of Technology

**11:30**

#### *Analysis of Broad-Band Multilayered Wave Absorbing Materials*

\*Arba'iah Inn, \*Lilywati Manap, \*Zunaira Murat, \*Riadh W Y Habash, \*Nabil M. Abdul Kadir, \*Deepak K. Ghodgaonkar,  
\*\*Ahmad Hairi Abu Baker  
\*School of Engineering  
\*\*MARA Institute of Technology

**11:50**

#### *Biomagnetic Estimation of Cardiac Dipoles with a Heart Model and a Neural Network*

Ceon Ramon, Merv Casem, Lee L Huntsman  
University of Washington

**LT7 (13:30-15:50)**

Session 8P7

### Low Frequency Applications

Chairperson: Uri Suissa, Ben-Gurion University of the Negev

Co-Chairperson: Keren Li, The University of Electro-Communications

**13:30**

#### *Applying Duality Considerations for Treating DC and Low Frequency Magnetic and Electric Field Sensors*

Ben-Zion Kaplan, Uri Suissa  
Ben-Gurion University of the Negev

**13:50**

#### *2-D and 3-D Analytical Electrostatic Green's Functions for Arbitrarily Multilayered Dielectric Media*

Keren Li  
The University of Electro-Communications

**14:10**

#### *Low Frequency Electromagnetic Signals Preceding Major Earthquakes*

\*J Y Dea, \*P M Hansen, \*\*W M Boerner  
\*NCCOSC, RDTE DIV  
\*\*Univ. of Illinois at Chicago

**14:30**

#### *Device for Magnetic Testing of Steel Ropes*

Jaromír Pistora, Michael Lesnak, Vilém Madr,  
Lubomír Matyska  
Technical University Ostrava

**14:50**

#### *Nonlinear Electromagnetic Phenomena in Pure Metal Transmission Line under the Action of Strong Current Pulses*

A B Rinkevich, V V Ustinov  
Ural Division of Russian Academy of Sciences

**15:10 Break**

**15:30**

#### *Radiations of A Horizontal Dipole in the Anisotropic Ionosphere to the Earth-Ionosphere Waveguide*

Zhiyu Chen  
Academia Sinica